

A Guide to Waste Audits and Waste Reduction Work Plans for Industrial, Commercial and Institutional Sectors

As Required Under Ontario Regulation 102/94

Protecting our environment.



Ontario

You can view and download the regulation titled *Waste Audits and Waste Reduction Work Plans* by going to www.e-laws.gov.on.ca and entering O. Reg. 102/94 into the search box.

Please direct any questions to the Ministry of the Environment's Public Information Centre at the number listed below.

You can download additional copies of this guide from the ministry's web site at www.ene.gov.on.ca/en/publications/forms/index.php#AuditandReduction or obtain hard copies by calling the Public Information Centre:
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PREFACE

This guide will help you understand the requirements of Ontario Regulation 102/94 (O. Reg. 102/94 – Waste Audits and Waste Reduction Work Plans) as it applies to industrial, commercial and institutional (IC&I) entities (for the purposes of this guide, the term “entity” is used in a general manner and includes: retail shopping establishments, retail shopping complexes, office buildings, restaurants, hotels and motels, hospitals, educational institutions and large manufacturing facilities). If you are in the construction and demolition sector, you should refer to *A Guide to Waste Audits and Reduction Work Plans for Construction and Demolition Projects as Required under Ontario Regulation 102/94.*)

O. Reg. 102/94 is a vital part of Ontario’s efforts to encourage businesses to reduce the amount of waste they produce, to reuse whatever waste they can and to recycle the rest. Businesses need to do this if Ontario is to meet its overall goal of reducing the amount of waste going to disposal.

This guide is intended to help you understand the minimum requirements for conducting waste audits and preparing waste reduction work plans for IC&I entities as required under O. Reg. 102/94. The regulation is part of Ontario’s 3Rs Regulations (3Rs stand for reduce, reuse and recycle).

Note that those entities that are subject to O. Reg. 102/94 and are located in a municipality with a population of at least 5,000 or are designated as a large manufacturing facility must also implement a source separation and recycling program in accordance with O. Reg. 103/94. (See section 2.3 for more information).

The other guides in the series are:

- A Guide to Source Separation of Recyclable Materials and Leaf and Yard Waste Systems for Municipalities as Required Under Ontario Regulation 101/94
- A Guide to Approvals for Recycling Sites, Leaf and Yard Waste Composting Sites and Compost Use as Required Under Ontario Regulation 101/94
- A Guide to Waste Audits and Waste Reduction Work Plans for Construction and Demolition Projects as Required Under Ontario Regulation 102/94
- A Guide to Source Separation of Recyclable Materials for Industrial, Commercial and Institutional Sectors and Multi-Unit Residential Buildings as Required Under Ontario Regulation 103/94
- A Guide to Packaging Audits and Reduction Work Plans as Required Under Ontario Regulation 104/94

Disclaimer: These guides are for informational purposes only and are not intended to provide specific advice or recommendations in any circumstances. Moreover, these guides are not, and should not be construed as, legal advice. Please review Ontario Regulations 101/94, 102/94, 103/94 and 104/94 and, if you have any questions about the application or interpretation of these regulations or have other legal questions, you should consult a lawyer.

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1.0 INTRODUCTION

O. Reg. 102/94 applies to non-hazardous solid wastes from designated industrial, commercial and institutional (IC&I) sources. This guide focuses on the requirements for waste audits and waste reduction work plans for designated IC&I entities (for the purposes of this guide, the term “entities” is used in a general manner and includes: retail shopping establishments, retail shopping complexes, office buildings, restaurants, hotels and motels, hospitals, educational institutions and large manufacturing facilities). If you are in the construction and demolition sector, you should refer to *A Guide to Waste Audits and Reduction Work Plans for Construction and Demolition Projects as Required under Ontario Regulation 102/94*.

The implementation of the IC&I waste audits and waste reduction work plans by those entities subject to O. Reg. 102/94 will contribute significantly toward the success of the province’s efforts to promote the diversion of waste away from landfills and incinerators as the preferred approach to waste management. IC&I wastes make up the largest component of the non-hazardous solid waste stream. Efforts to divert the IC&I waste stream, therefore, will have the greatest potential for reducing the quantity of materials destined for disposal and increasing the quantity put back into productive use.

IC&I waste audits and waste reduction work plans can also affect other waste streams. For example, a waste audit may identify that a manufacturing process can be modified to use less raw material in a consumer product. In turn, this reduces the amount of residential waste generated. Waste audits can also suggest product design changes that will have a positive impact on managing consumer waste such as making the product more reusable or recyclable.

Section 2.0 of this guide describes the general requirements for conducting the waste audit, preparing the waste reduction work plan and implementing it. Section 3.0 identifies the entities that must comply with O. Reg. 102/94 and notes any special provisions that may apply to each of those sectors.

The appendices contain additional material to help affected parties meet regulatory requirements. Appendix A provides links to additional information, including copies of the 3Rs regulations and guides. Appendix B contains information on the steps that you need to follow and checklists you may use for conducting the waste audit and preparing the waste reduction work plan. Examples of completed forms are also included here.

Please note that in addition to the requirements of O. Reg. 102/94, IC&I establishments are also required to source separate certain wastes as set out in O. Reg. 103/94. Your waste reduction work plan should include these wastes, if generated by your establishment, and how they will be source separated and reused or recycled. You should refer to *A Guide to Source Separation of Recyclable Materials for Industrial, Commercial and Institutional Sectors and Multi-Unit Residential Buildings as Required Under Ontario Regulation 103/94*.

2.0 GENERAL REQUIREMENTS

This section outlines the general requirements to undertake all components of the waste audit, the waste reduction work plan and the reporting process to document your activities.

There are four basic steps to implement a waste reduction program as required under O. Reg. 102/94:

- 1) Conduct the waste audit;
- 2) Develop the waste reduction work plan;
- 3) Implement the waste reduction work plan; and
- 4) Update and implement the waste audit and waste work plan, annually.

Only “designated” entities must comply with O. Reg. 102/94. See Section 3 of this guide for descriptions of the “designated” entities. To comply, the owner and/or operator of an entity must complete a waste audit and waste reduction work plan within six months of becoming subject to the regulation.

A new entity that is above the size threshold at its start-up is subject to the requirements of O. Reg. 102/94 and will have to conduct a waste audit and waste reduction work plan as well as implement the waste reduction work plan within six (6) months of its start-up date.

Existing entities will become subject to the requirements of O. Reg. 102/94 when the threshold criterion is exceeded. These entities will have to conduct a waste audit and waste reduction work plan as well as implement the waste reduction work plan within six (6) months of becoming subject to the obligations imposed by O. Reg. 102/94.

2.1 Conducting Your Waste Audit

A waste audit is a study of waste generated by normal activities that take place at a designated entity. O. Reg. 102/94 is intended to ensure that a designated IC&I waste generator takes a comprehensive approach to the study. The waste audit will involve not only measuring the quantity of waste and identifying its composition, but also identifying the manner by which the waste gets produced, including the management decisions and policies that relate to the production of waste.

Under O. Reg. 102/94, all waste audits must address:

- The amount, nature and composition of the waste generated in all functional areas of the entity;
- How the waste is produced, including relevant management decisions and policies;
- How the waste is managed; and
- The extent to which materials or products used or sold consist of recycled or reused materials or products.

The waste audit must encompass all administrative, warehousing or other ancillary activities or departments located on the same site and associated with the designated entity.

An owner or operator responsible for more than one entity subject to O. Reg. 102/94 may conduct a single audit for a representative entity if it is reasonable to expect that the results of separate audits would be similar. For example, a school board could conduct one audit for all similar schools under its jurisdiction and use the results of the single audit as the basis for developing a waste reduction work plan for each school subject to O. Reg. 102/94.

The school board need only develop one work plan but would have to include each school as a distinct entity within the plan.

2.2 Developing Your Waste Reduction Work Plan

The information resulting from the waste audit forms the basis for developing the waste reduction work plan for your entity.

O. Reg. 102/94 requires that all completed waste reduction work plans must include all reasonable actions that can be taken to reduce, reuse and recycle waste. These actions must be identified in a step-wise process that follows the 3Rs hierarchy:

- First – Reduce waste by developing actions that will stop waste from being produced in the first place.
- Next – Reuse any waste at your establishment or donate to others.
- Lastly – Recycle any waste materials through a recycling company.

The waste reduction work plan must encompass all administrative, warehousing or other ancillary activities or departments located on the same site and associated with the designated entity.

The waste reduction work plan must also set out **who** will implement each part of the plan, **when** each part will be implemented and **what** the expected results are.

2.3 Implementing Your Waste Reduction Work Plan

O. Reg. 102/94 requires that the waste reduction work plan must explicitly assign responsibilities and identify resources needed for its implementation and give an estimate of the expected results to be achieved. Your work plan may be structured so that some actions are given a higher priority than others. An owner or operator will need to determine which actions will contribute the most toward the entity's waste reduction objectives.

Note that those entities that are subject to O. Reg. 102/94 and are located in a municipality with a population of at least 5,000 or are designated as a large manufacturing facility must implement a source separation and recycling program in accordance with O. Reg. 103/94. Further details are

contained in *A Guide to Source Separation of Recyclable Materials for Industrial, Commercial and Institutional Sectors and Multi-Unit Residential Buildings as Required under Ontario Regulation 103/94* (refer to Appendix A for link).

2.4 Annual Updating of Your Audit and Work Plan

O. Reg. 102/94 makes the 3Rs a routine part of the operations or doing business by requiring the waste audit and the written reports of the audit and work plan to be updated at least once a year. This will ensure that the audit and work plan are coordinated with other business reporting processes. A business that experiences rapid growth or significant change in production processes, however, may want to update its waste audit and waste reduction work plan on a more frequent basis.

A new owner or operator of a designated entity may update a waste audit or waste reduction work plan that was conducted by a previous owner or operator.

2.5 Documenting Your Waste Reduction Program

A waste audit and waste reduction work plan must be documented in written reports as described below. In some cases, some entities may have specific additional reporting requirements, as specified in O. Reg. 102/94.

- A waste reduction work plan must set out who will implement each part of the plan, when each part will be implemented and the expected results.
- A report of a waste audit or a waste reduction work plan must be on a form provided by the ministry or another form as long as the other form is in the same format. Samples of completed forms are found in Appendix B of this guide. Blank forms are included in Appendix D. The guides and forms are also available at: www.cne.gov.on.ca/en/publications/forms/index.php#AuditandReductions
- A copy of a report of a waste audit and a waste reduction work plan must be retained on file for at least five years after it is prepared.
- The waste reduction work plan or a summary of the work plan must be posted in places where employees and/or tenants will see it. If a summary of the work plan is posted, an employee and/or tenant must also be allowed to see the entire work plan on request.
- The owner or operator of a designated entity must submit the most recent waste audit and waste reduction work plan to the Director within seven days of his/her request. O. Reg. 102/94 does not require automatic reporting to the ministry.
- A waste audit must address the extent to which materials or products used and/or sold by the owner consist of recycled or reused materials or products (applies to retail shopping establishments and large manufacturing establishments only).

3.0 WHO IS AFFECTED?

3.1 Retail Shopping Establishments

The owner of a “retail shopping establishment” is subject to O. Reg. 102/94 if:

- the retail establishment occupies premises with a total floor area of at least 10,000 square metres*; or
- the retail establishment, regardless of its size, occupies premises in a retail shopping complex and the owner of the retail shopping establishment is solely responsible for the establishment’s waste management.

* For the purposes of determining the 10,000 square metres threshold, every area on the premises that is used to sell goods or services at retail must be included. For example, if a retail shopping establishment was 9,500 square metres and had a greenhouse that was 600 square metres, the owner would be subject to O. Reg. 102/94. Parking spaces are not included in the threshold calculation. Floor area measurements for areas dedicated as retail space, should follow the same calculation as that for the *Ontario Building Code*’s “gross area” (e.g., measurement between the outside surfaces of exterior walls).

The owner must conduct a waste audit for the waste generated at the retail shopping establishment and complete and implement a waste reduction work plan. The owner is also required to update the waste audit and its written report as well as the waste reduction work plan on an annual basis.

3.2 Retail Shopping Complexes

The owner of a “retail shopping complex” is subject to O. Reg. 102/94 if the complex has a total floor area of at least 10,000 square metres and is occupied by establishments that sell goods or services at retail to persons that come to the establishments. See section 3.1 for a definition of floor area.

Note, that the 10,000 square metres threshold size criterion for a retail shopping complex is calculated by adding the square metres sizes of all retail shopping establishments located on the premises of the retail shopping complex. Other areas in the retail shopping complex, such as public libraries, are not included in the overall calculation of whether the retail shopping complex meets the 10,000 square metres threshold criterion.

The owner must conduct a waste audit covering the waste generated at the complex (other than the waste generated at the premises for which the owner is not responsible, e.g., retail shopping establishments that are responsible for their own waste management) and prepare and implement a waste reduction work plan.

The owner is also required to update the waste audit and the its written report and the waste reduction work plan on an annual basis.

Although O. Reg. 102/94 does not specifically define “retail shopping complex”, the ministry takes the position that it includes retail shopping complexes that are planned, developed and designed as a unit, including department stores, strip malls, plazas, indoor shopping malls or centres, supermarkets, department stores and galleries.

3.3 Office Buildings

The owner of a building or a “group of buildings” that have a total floor area of at least 10,000 square metres for use as offices is subject to O. Reg. 102/94 and must conduct a waste audit covering the waste generated at the building or group of buildings, and prepare and implement a waste reduction work plan.

The owner is also required to update the waste audit and its written report and the waste reduction work plan on an annual basis.

O. Reg. 102/94 defines “group of buildings” to include two or more buildings where:

- (a) each building has the same owner and
 - (b) each of the buildings is in proximity to at least one of the other buildings such that there is, at most, one building/property of different ownership located between the two buildings.
- For the purposes of determining whether there is more than one building/property of different ownership located between the two buildings, public roads, public parks and any land over which the public has a general right of access are not counted.

The ministry takes the position that the total floor area is defined for a building or a group of buildings as the area devoted to the use as offices. For instance, if some of the floor area is used for parking, laboratory or residential use, that floor area will not be counted toward the 10,000 square metres threshold criterion. Floor area measurements for areas dedicated as office space, should follow the same calculation as that for the *Ontario Building Code*’s “gross area” (e.g., measurement between the outside surfaces of exterior walls).

The owner of the building or group of buildings is responsible for conducting a waste audit and preparing and implementing a waste reduction work plan for waste generated at the building or group of buildings. The owner needs to include tenants’ activities only insofar as they impact the owner’s waste management services.

3.4 Restaurants

The owner of a “restaurant”, including a “take-out restaurant”, is subject to O. Reg. 102/94 if the gross sales for all restaurants operated by the owner in Ontario were \$3 million or more in any of the two preceding calendar years. The owner must conduct a waste audit covering the waste generated by the operation of the restaurant(s), and prepare and implement a waste reduction

work plan.

The owner is also required to update the waste audit and its accompanying written report and the waste reduction work plan on an annual basis, as long as the gross annual sales from the owner's restaurants in Ontario equal or exceed \$3 million.

The restaurant owner will become subject to O. Reg. 102/94 in the first calendar year following the two preceding calendar years in which gross annual sales for all restaurants operated by the same owner in Ontario were \$3 million or more.

The owner of a restaurant will cease being subject to O. Reg. 102/94 if in the two preceding calendar years the gross annual sales for all restaurants operated by the same owner in Ontario were less than \$3 million.

If the owner cannot supply proof within seven days to the ministry that gross annual sales were under \$3 million, then the restaurant will become subject to O. Reg. 102/94.

In some cases, the owner of a restaurant that who would normally be required to conduct a waste audit and waste reduction work plan under O. Reg. 102/94 may not have to do so. The owner of the restaurant will qualify for an exemption for a particular restaurant if that restaurant is located in a retail shopping establishment or complex, office building, hotel or motel, hospital or campus of an educational institution that is required to comply with O. Reg. 102/94 and the owner of the restaurant co-operates in conducting the waste audit and the preparation of the waste reduction work plan for the entity that is subject to O. Reg. 102/94.

Although O. Reg. 102/94 does not specifically define "restaurant", the ministry takes the position that establishments that prepare food or beverages – preparation may include cooking, baking, filling or packaging into severable portions – on site and offer them for immediate sale to the public are subject to the regulation. Examples of establishments that the ministry considers to be restaurants include the following: licensed/unlicensed restaurants, pubs, taverns, coffee shops and cafeterias that provide sit-down meals, take-out, pick-up or delivery.

3.5 Hotels and Motels

The owner of a "hotel or motel" that has more than 75 units is subject to O. Reg. 102/94 and must conduct a waste audit covering the waste generated by the operation of the hotel or motel, and prepare and implement a waste reduction work plan.

The owner is also required to update the waste audit and its written report and the waste reduction work plan on an annual basis.

The ministry takes the position that the owner of a hotel or motel must comply with O. Reg. 102/94 regardless of whether the 75 units are being used each night.

Although O. Reg. 102/94 does not specifically define "hotel" or "motel", the ministry takes the

position that facilities with sleeping accommodations for temporary stays – which include hotels, motels, inns, hostels or other facilities providing temporary lodging to the traveling public – are subject to O. Reg. 102/94. The ministry also takes the position that a vacation cabin constitutes a single unit for the purposes of determining the total number of units a facility has. The ministry takes the position that campgrounds and trailer parks are not subject to O. Reg. 102/94.

3.6 Hospitals

The operator of a “public hospital” that is classified as a Group A, B or F hospital under Regulation 964 of the Revised Regulations of Ontario, 1990, made under the *Public Hospitals Act*, is subject to O. Reg. 102/94. The operator must conduct a waste audit covering the waste generated by the operation of the hospital, and prepare and implement a waste reduction work plan. The owner is also required to update the waste audit and its written report and the waste reduction work plan on an annual basis.

Regulation 964 classifies these hospitals as follows:

Group A: General hospitals with teaching facilities for university medical students, as evidenced by a written agreement between the hospital and the university with which it is affiliated and hospitals approved in writing by the Royal College of Physicians and Surgeons for providing post-graduate education leading to certification or a fellowship in one or more of the specialties recognized by the College.

Group B: General hospitals having at least 100 beds.

Group F: Hospitals for chronic patients and having at least 200 beds, not including group R hospitals.

See Appendix A for an internet link regarding the full listing of Group A, B and F hospitals.

Nursing homes or homes for the aged, which are not covered by the *Public Hospitals Act*, are not subject to O. Reg. 102/94.

3.7 Educational Institutions

The operator of an “educational institution” is subject to O. Reg. 102/94 if the location or campus has more than 350 full- or part-time persons enrolled during the calendar year. The operator must conduct a waste audit covering the waste generated by the operation of the institution at the location or campus, and prepare and implement a waste reduction work plan.

The owner is also required to update the waste audit and its written report and the waste reduction work plan on an annual basis.

The ministry takes the position that “educational institution” includes both public and private institutions covering elementary, secondary and vocational schools; training academies; colleges

and universities. Recreational facilities, such as summer youth camps with an incidental training component, are not considered “educational institutions” for the purposes of O. Reg. 102/94.

3.8 Large Manufacturing Establishments

The owner or operator of a “large manufacturing establishment” is subject to O. Reg. 102/94 if persons employed at the site work in excess of 16,000 hours in any one calendar month during the preceding two calendar years. The owner or operator must conduct a waste audit covering the waste generated by the establishment operating at the site, and prepare and implement a waste reduction work plan

The owner is also required to update the waste audit and the accompanying written report and the waste reduction work plan on an annual basis.

The owner or operator will become subject to O. Reg. 102/94 in the first calendar year following a calendar month in which persons employed at the site worked more than 16,000 hours.

The owner or operator will cease being subject to O. Reg. 102/94 if during the two preceding calendar years there was no calendar month in which the hours worked by the persons employed at the site exceeded 16,000 hours.

The Director may request that the owner or operator of a large manufacturing establishment supply proof of the total number of hours persons employed at the site worked in a month within seven days of being requested. Failure to provide satisfactory proof within the time limit will result in the owner or operator having to comply with O. Reg. 102/94.

For the purposes of a large manufacturing establishment:

- “owner” includes the operator of a manufacturing establishment, but does not include a landlord;
- “site” means one property and nearby properties owned or leased by the same person, where passage from one property to another involves crossing, but not traveling along a public highway.

Appendix A contains a link to Statistic Canada’s internet site that lists categories of manufacturing establishments according to the North American Industry Classification System (NAICS). NAICS can be used to determine if your operation is a manufacturing establishment.

APPENDIX A – Links to Additional Information

1. **e-laws:**
You can view and download O. Reg. 102/94 by going to www.e-laws.gov.on.ca and entering O. Reg. 102/94 into the search function (or you can find other Acts or regulations by entering their name).
2. **Copies of the 3Rs Guides:**
Additional copies of the 3Rs guides are available at:
www.ene.gov.on.ca/en/publications/forms/index.php#AuditandReduction
3. **Hospital Categories as per Ontario Regulation 964, Revised Regulations of Ontario, 1990, *Public Hospitals Act*:**
For a listing of Group A, B and F Hospitals, please refer to the Ministry of Health's internet page at: www.health.gov.on.ca/english/public/contact/hosp/hospcode.html
4. **List of Categories of Manufacturing Establishments:**
For a listing of manufacturing establishments according to the North American Industry Classification System (NAICS), please refer to Statistics Canada's internet page at:
www.statecan.ca/bsole/english/bsole?catno=12-501-X
5. **Ontario Environment Business Directory:**
The Ministry of the Environment maintains a web site for Ontario companies that provide environmental goods and services. www.envirodirectory.on.ca
6. **Ontario Waste Materials Exchange:**
Will match a waste materials producer with a potential user. www.owc.org
7. **Recycling Council of Ontario (RCO):**
The RCO's internet site offers waste reduction information. www.rco.on.ca
8. **Environment Canada:**
A publication entitled "*Working Your Way to a Green Office*" is available that shows how to start a waste reduction program and general environmental change in the workplace. www.atl.ec.gc.ca/udo/office/office.html
9. **Association of Municipal Recycling Coordinators (AMRC):**
A manual is available for a fee that deals with completing a waste audit and developing and implementing a waste reduction action plan.

Waste Audit and Reduction Operations Training Project: Manual for Training Participants is available at: www.amrc.ca/publications.html

APPENDIX B: A Typical Waste Reduction Program

Getting Started

The person you choose to be your Waste Reduction Coordinator will need good communication skills, organizational ability, and sound knowledge of your operations. An effective Waste Reduction Coordinator will have the greatest impact when fully involved in all aspects of the waste reduction program.

It is highly recommended that you form a Waste Reduction Team to set up and maintain your waste reduction program. The Team could consist of the coordinator, department representatives and communications staff. This will allow you to generate ideas collectively and ensure that the program is designed to provide opportunities for everyone to participate.

Also, making information available to all departments in your facility builds a stronger awareness of your waste reduction plans.

Examples of what role(s) the Coordinator/Team could play to successfully undertake a waste audit and to implement a waste reduction work plan include the following:

- Identifying and interpreting government requirements and regulations
- Securing senior management support
- Conducting and/or overseeing the waste audit
- Establishing the waste reduction goals
- Identifying funding requirements and the costs and benefits of the program
- Developing a 3Rs program and implementation schedule
- Monitoring the waste reduction, reuse, and recycling activities
- Promoting and communicating waste reduction activities

Communicating Project Objectives

Before initiating a waste audit or waste reduction work plan, you should inform everyone involved of the objectives of the program and the importance of their cooperation.

Conducting a Waste Audit

Introduction

An important factor in planning your waste audit is the level of audit detail you choose to use. The level of detail depends upon the size of the facility, complexity of operations and the accuracy you require for your waste reduction work plan.

The following waste audit process is one approach that will provide you with enough information to proceed with your waste reduction work plan and to meet the requirements of O. Reg. 102/94. This approach is intended to identify the major wastes and to provide a starting point for your waste diversion initiatives.

Step 1: Assemble Basic Information

Review Operations

You should review and record the following basic information about your establishment:

- Number of employees, students, tenants, building area or floor area, or other indicators relevant to your type of entity
- Site location and size (if applicable to thresholds)
- Type of entity
- Internal activities, for example; office space, cafeteria(s), maintenance, commercial industrial and grounds keeping
- Purchasing policies

It is also important to review all aspects of your establishment, so that you will not miss future opportunities for waste reduction. Here are some points to review:

- Composition and quantity of all wastes directly generated within the establishment through all normal activities.
- The extent to which materials or products used or sold consist of recycled or reused materials.
- Management decisions and policies that relate to the production of waste.
- The way in which the waste is managed.

Review Existing Waste Reduction and Disposal Activities

You should review your current waste management activities to provide start-up information for your waste audit and for later efforts in waste reduction planning. Basic questions to be asked, include the following:

- Who is responsible for waste management and reduction?
- What are the current waste separation and recycling activities?
- What are the timing and frequency of existing waste collections?
- What methods of waste collection are employed for internal and external waste handling?
- What quantities of waste and recyclables are collected?
- Who are the contractors for waste and recycling services?
- What is the gross cost of waste collection and disposal?
- What are the recycling companies in your area?

Step 2: Identify Resource Requirements

Before starting the waste audit, you should determine the resources that will be required. If resources are limited or the operation is complex, you may want to hire a consultant to complete the waste audit. Alternatively, certain recycling companies will complete a waste audit and

provide a report as part of their collection service or at an additional fee. Figure 1- Resource Requirements Checklist, may be used to document your resource needs.

Your resource requirements may include the following:

- Adequate time for assigned people to carry out audit tasks to ensure the quality of your audit data.
- Storage containers to isolate, move, and sort waste and recyclables.
- Bag tags or labels to identify wastes from various generation points.
- Space for sorting and storing wastes during the audit.
- A digital weigh scale is highly recommended. In addition, a fish scale (i.e., a small scale with a hook at the bottom and sold at sporting goods stores) is useful for weighing lighter bags of material.

Figure 1: Example of a Resource Requirement Checklist

| Name of Company or Institution | <i>ABC Corporation</i> | | |
|--|---|----------|--|
| Contact Person | <i>John Doe</i> | | |
| Name and Site Address | <i>Widget Plant, 123 Anywhere Street, Big City,</i> | | |
| Planned Date of Audit | <i>August 1, 2008</i> | | |
| Audit Task | Personnel | | Scheduled Number of Days Required |
| | Position | # | |
| Identify resources and availability | <i>Coordinator</i> | <i>1</i> | <i>1</i> |
| Initial waste audit planning and design/tutorial for sorters | <i>Coordinator and Sorters</i> | <i>5</i> | <i>1</i> |
| Waste sorting and measurement | <i>Sorters</i> | <i>4</i> | <i>2*</i> |
| Estimating total annual waste quantities | <i>Coordinator</i> | <i>1</i> | <i>1</i> |
| Recycled content of materials and supplies purchased for the site being audited | <i>Coordinator and Purchaser</i> | <i>2</i> | <i>1</i> |
| Complete Ministry waste audit reporting | <i>Coordinator</i> | <i>1</i> | <i>2</i> |
| Equipment List | | | Quantity |
| <i>Digital Weigh Scale</i> | | | <i>1</i> |
| <i>Fish Scale</i> | | | <i>1</i> |
| <i>Sorting tables</i> | | | <i>2</i> |
| <i>Sorting Bins (for sorting waste and recyclables)</i> | | | <i>20</i> |
| <i>Garbage bags and labels</i> | | | <i>25</i> |
| <i>Hand trowels or other implements (for sorting waste and recyclables)</i> | | | <i>4</i> |
| <i>Protective clothing/Masks/Pairs of Gloves/Safety Goggles</i> | | | <i>4</i> |
| <i>Plastic sheets</i> | | | <i>4</i> |
| <i>Brooms/Dust pans</i> | | | <i>1</i> |
| <i>Journal and/or Laptop computer/pens and paper (for data entry)</i> | | | <i>1</i> |

* The number of days required for sorting depends upon how many days worth of waste and recyclables you intend to audit.

Step 3: Identify Wastes

The objective of this step is to estimate types of wastes and places where they are generated. During the review, you should note existing collection and storage practices and any other special considerations that should be taken into account for the waste reduction work plan.

The best way to identify the different types of waste that your establishment generates is to complete a walk-through while noting the types of waste and recyclables that are generated in each operation or area. Be sure to look into waste/recycling containers and to ask others questions, e.g., staff, management or tenants.

Classify your wastes as follows:

Recyclables:

1. Materials that the ministry will require you to source separate for recycling (see *A Guide to Source Separation of Recyclable Materials for Industrial, Commercial and Institutional Sectors and Multi-Unit Residential Buildings as required by O. Reg. 103/94*).
2. Other materials identified within your operation that could be source separated for reuse or recycling.

Waste:

3. Residual material that would go for disposal.

Step 4: Estimate Waste Quantities

It is now necessary to estimate how much of each of the three classifications of waste materials identified above that your operation generates during a specific period. Depending upon how your waste and recyclables are managed and collected, this may be straight forward or a very complex task. Links to additional information about conducting a waste audit are included in Appendix A.

You can estimate the weight of waste by using one or more of the following procedures:

- 1) **By obtaining data collected by your waste and recycling contractors.** However, this is not always possible, for example, if your contractor collects waste from a number of clients using the same vehicle.
- 2) **By weighing representative containers or bags of waste and recycling.** You can determine an estimated weight by weighing a few full containers or bags of waste or recycling and then calculating the average weight. Remember to subtract the weight of the empty container so you can calculate the net weight of the waste or recyclables that is contained inside. The estimated total weight of waste or recycling from each area can then be calculated by multiplying the number of full, or partially full, containers or bags by the average weight.

For example, after weighing 4 recycling carts full of soft drink containers it is found that they weigh 20 kg, 30 kg, 40 kg and 35 kg each (after subtracting the empty weight of the

carts). The average weight of soft drink containers per recycling cart is therefore: $20 + 30 + 40 + 35 = 125$ kg divided by 4, which equals 31.25 kg. The company generates 20 of these carts per week. Therefore, the estimated net weight of soft drink containers generated per week is: $31.25 \text{ kg/cart} \times 20 \text{ carts/week} = 625 \text{ kg/week}$ of recyclable soft drink containers.

- 3) **By auditing waste samples.** To obtain data on the composition and quantity of waste or recyclable materials, you can complete an analysis of waste samples. This involves collecting waste samples, sorting them into material categories and weighing each category. Since the amount and type of waste and recyclables collected can vary by the day of the week or season, it is advisable to complete this task at different times of the week and more than once during the year. The process involves several steps as follows:

- Collect your waste and recycling sample.
- Weigh the sample.
- Sort the various categories of waste (e.g., office paper, pop cans) into sorting containers.
- Determine the weight of each category by weighing the contents of the sorting container for each category separately.
- Factor or extrapolate the results of the sampling to estimate annual waste generation for each material category, e.g., $1 \text{ kg/week} \times 52 \text{ weeks} = 52 \text{ kg/year}$.

- 4) **By weighing materials before they are placed into the main waste or recycling containers for collection.** In most cases, materials can be weighed before they are placed into the main waste or recycling collection container. The night before the audit, each waste and recycling receptacle throughout your facility should be lined with a clear plastic bag and labeled to distinguish where it is located and what type of waste it contains (e.g., "kitchen waste", "main office paper recycling".) At the end of the day for the audit, the filled bags can be removed and weighed. A fish scale is useful for weighing each bag of material. For each bag, record the location it came from, the type of material it represents and the weight. Through addition, you can then calculate the total amount of waste and each type of recyclable material (e.g., office paper, pop cans, wood, etc.) that your facility generates. This will provide you with information regarding one day of waste generation.

- 5) **By determining the estimated volume of waste and recyclables and converting it to weight.** This is a more complex approach, but it may be useful when it is not possible to weigh certain materials (e.g., large materials at a manufacturing facility). The following formula can be used to calculate the volume of material, if it is not readily available:

$$\text{Volume} = C_n \times C_v \times n \times p$$

Where:

C_n - number of containers

C_v - volume or size of each collection container

n - number of times each container is collected

p - percentage of container is filled

You can calculate the weight of each waste or recyclable material by multiplying the estimated volume by the density of the material:

$$\text{Weight} = \text{Volume} \times \text{Density}$$

Appendix C contains bulk densities for several common waste materials. For example, a metal fabricating company produces waste in the following two streams: Scrap metal and regular waste

The waste handling system consists of a 30 yd³ roll-off bin for scrap metal and two 10 yd³ dumpsters for garbage. The owner of the site monitors the system for one month and sets up a calculation table as follows to determine the total waste generated:

| | | Scrap Metal | Waste |
|-------|---|--------------------|--------------|
| C_n | Number of containers | 1 | 2 |
| C_v | Volume of each container (yd ³) | 30 | 10 |
| n | Number of times collected | 4 | 8 |
| p | % container is filled | 90 | 90 |
| V | Volume generated (yd ³) | 108 | 144 |
| D | Density (kg/yd ³) from Appendix C | 300 | 200 |
| W | Weight generated (kg) | 32,400 | 28,800 |

Step 5: Identify Recycled Content

This step requires you to examine purchasing specifications to identify the recycled content of purchased products, packaging and raw materials.

Recycled content is any material that is derived from a waste and used to manufacture a product. Recycled content can take two forms:

- Recycled content can be derived from “pre-consumer” (or “post-industrial”) waste, which is waste that is generated in the production process, e.g., trimmings from a paper manufacturer.
- Recycled content also can be derived from “post-consumer” waste, which is waste that is generated as a result of a final consumer using a product, e.g., old newspapers or corrugated cardboard boxes.

You should determine whether you can take steps to use items with a higher recycled content or that allow you to reuse materials directly on site. If you are a manufacturer you should determine whether you could also take steps to increase the use of waste from your process as a feedstock.

Note that the requirement to review recycled content as part of the audit for a designated office building or retail shopping complex refers to the recycled content of materials or products used in the operation of the building or complex, and not those of tenants. For example, the owner of the office building would review the recycled content of the paper products used for cleaning or washroom facilities, but not the office papers used by his tenants.

You can quickly review the recycled content of each material by looking at your major material purchases. Approach your supplier if the information needed is not readily available or to discuss options for increasing the recycled content.

Step 6: Estimate Waste for Baseline Year

To assess progress in your waste reduction program, it is important to compare the amount of waste that was generated before you started your waste reduction program (“baseline”) to the amount of waste generated in subsequent years. The baseline year is usually the initial year that you performed the waste audit and preferably prior to starting your diversion program.

If you do not have specific records of the wastes generated for your baseline year, you may consider the following approaches for estimating this information:

- 1) Your waste hauler and recyclers may be able to provide you with total quantities for your baseline year.
- 2) If your facility has experienced minimal change since your baseline year, you can extrapolate the data from current waste generated based on relevant baseline information levels, such as number of employees, students, sales, or production data.

Step 7: Complete Waste Audit Report

You should maintain a record of the information reviewed, assumptions made, waste samples examined (including the sample dates) and the material weights and/or volumes calculated. Figure 2 Waste Sampling Record, provides a suggested recording format and example. You may find that you need to complete several of these sampling records, one for each operational area, before actually obtaining the final numbers for your waste audit report.

You are now ready to complete a Waste Audit Report, as shown in Figure 3 as required by O. Reg.102/94. You must update your waste audit and the waste audit report annually.

Appendix D contains blank forms. You can use your own forms as long as the same information is provided. Forms are also available from the ministry’s web site at:

www.ene.gov.on.ca/en/publications/forms/index.php#AuditandReduction

Figure 2: IC&I Waste Sampling Record

| | | | | |
|------------------------|--|--------------------------------|--|--------------------------|
| Sample Date | <i>Feb 21, 2007</i> | | | |
| Company | <i>ABC Insurance Co.</i> | | | |
| Site Address | <i>123 Main Street</i> | | | |
| Sample Location | <i>Administration Department</i> | | | |
| Comments | <i>Normal activities observed during sample period</i> | | | |
| Material | Characteristics | * Weight of sample (kg) | Volume of sample (yd³) | % of Total Sample |
| <i>Cardboard</i> | <i>Clean, no wax</i> | 75 | <i>1.5</i> | <i>20</i> |
| <i>Fine Paper</i> | <i>Colours</i> | 113 | <i>0.75</i> | <i>30</i> |
| <i>Newsprint</i> | <i>Clean</i> | 19 | <i>0.1</i> | <i>5</i> |
| <i>Aluminum cans</i> | <i>Lunch room</i> | 3 | <i>0.25</i> | <i>1</i> |
| <i>Glass bottles</i> | <i>Lunch room</i> | 19 | <i>0.5</i> | <i>5</i> |
| <i>Plastic bottles</i> | <i>Lunch room</i> | 19 | <i>0.5</i> | <i>5</i> |
| <i>Food waste</i> | <i>Lunch room</i> | 100 | <i>1.0</i> | <i>27</i> |
| <i>Other</i> | | 27 | <i>0.4</i> | <i>7</i> |
| Total | | 375 | 5 | 100 |

* The key measurement that you should record during your waste audit is the weight of the waste and each type of recyclable material.

Figure 3:**Ministry of the Environment Waste Form***Sample***Report of a Waste Audit****Industrial, Commercial and Institutional Establishments****As required by O. Reg. 102/94**

This report must be prepared 6 months after becoming subject to O. Reg. 102/94 and a copy retained on file for at least five years after it is prepared, and be made available to the ministry upon request.

I. GENERAL INFORMATION

| | | | |
|--|-------------------------------------|-------------------------------------|---|
| Name of Owner and/or Operator of Entity(ies) and Company Name: <i>1234 Ontario Ltd.</i> | | | |
| Name of Contact Person: <i>Ms. Recycler</i> | | Telephone #: <i>416-123-4567</i> | Email address: <i>recycler@1234Ontario.com</i> |
| Street Address(es) of Entity(ies): <i>123 Environment Street</i> | | | |
| Municipality: <i>Anyplace</i> | | | |
| Type of Entity (check one) | | | |
| Retail Shopping Establishments | <input type="checkbox"/> | Hotels and Motels | <input type="checkbox"/> |
| Retail Shopping Complexes | <input type="checkbox"/> | Hospitals | <input type="checkbox"/> |
| Office Buildings | <input checked="" type="checkbox"/> | Educational Institutions | <input type="checkbox"/> |
| Restaurants | <input type="checkbox"/> | Large Manufacturing Establishments | <input type="checkbox"/> |

Note: O. Reg. 102/94 does not apply to multi-unit residential buildings.

II. DESCRIPTION OF ENTITY

| |
|--|
| Provide a brief overview of the entity(ties): |
| <p><i>Twenty three storey office building with a floor area of approximately 11,000 m², two storey underground parking garage, cafeteria, main atrium area. Each floor above the atrium contains 2 washrooms, kitchenette/servery, 2 photocopy rooms, a reception/lobby area, janitor station, individual cubicles as well as enclosed offices.</i></p> <p><i>The atrium includes a small coffee shop - mainly for take out, public seating, security desk and 2 washrooms.</i></p> <p><i>Lower floor/below ground is a printing room, washrooms, maintenance office, a shipping area containing a loading dock, short term parking, shipping/receiving office, and a waste management area for the waste compactor and recycling carts.</i></p> <p><i>The cafeteria is located on the 3^d floor and has a full food preparation area/kitchen, serving area, tableware wash area with dishwashers, sitting area for approximately 40 persons. Cafeteria provides food on plates with reusable cutlery (for food and beverages consumed inside the cafeteria). Polystyrene containers are used for any food or beverages ordered as "take out". Most food and beverages are purchased as take out.</i></p> |

III. HOW WASTE IS PRODUCED AND DECISIONS AFFECTING THE PRODUCTION OF WASTE

| For each category of waste that is produced at the entity(ies), explain how the waste will be produced and how management decisions and policies will affect the production of waste. | |
|---|--|
| Categories of Waste | How Is the Waste Produced and What Management Decisions/Policies Affect Its Production? |
| <i>Example: Disposable Food Packaging</i> | <i>Generated by customers eating inside restaurant. Food packaging is used for health reasons. Reusable mugs for customers consuming coffee/tea inside restaurant is being reviewed.</i> |
| Aluminum food and beverage cans | <i>Produced in the cafeteria or brought in by staff/public.</i> |
| Cardboard | <i>Produced from packaged goods, unpackaged in shipping area or on each floor.</i> |
| Fine paper | <i>Produced on each floor by staff. Policy to use duplex printing to reduce paper consumption. Large amounts from print room.</i> |
| Glass food and beverage bottles/jars | <i>Produced in cafeteria or brought in by staff/public.</i> |
| Newsprint | <i>Newspapers brought in by staff or available in cafeteria..</i> |
| Steel food and beverage cans | <i>Produced in cafeteria or brought in by staff/public.</i> |
| PET (#1) plastic food and beverage bottles | <i>Produced in cafeteria or brought in by staff/public.</i> |
| HDPE (#2) plastic jugs, crates, totes and drums | <i>Shipping area - empty containers from cleaning and maintenance staff. Cafeteria - bulk food containers.</i> |
| LDPE (#4) plastic film | <i>Produced in shipping area - mainly shrink wrap packaging from goods.</i> |
| Polystyrene (#6) | <i>Take out - cafeteria or from outside sources Packaging - packaging chips, foam inserts in boxes in shipping area.</i> |
| Organics | <i>Most food waste is produced in cafeteria and some in the kitchenettes. Some is generated in cubicles/offices.</i> |
| Boxboard e.g., shoe or cereal boxes | <i>Mainly packaging from stationary. Produced on each floor/shipping area</i> |
| Glossy magazines, catalogues, flyers | <i>Produced mainly in the offices - from subscriptions or general mail</i> |
| Wood | n/a |
| Steel | n/a |
| Drywall | <i>Small amounts during renovations - taken away by contractors.</i> |
| Skids | <i>Produced in shipping area</i> |
| Paper towels | <i>Generated in washrooms, kitchenette and the cafeteria.</i> |
| Printer cartridges | <i>Collected from each floor and sent for recycling</i> |
| IT equipment/audio-visual equipment | <i>IT or AV equipment is leased/old equipment removed by contractor.</i> |
| Furniture | <i>Surplus furniture is stored/reused; broken furniture is disposed.</i> |
| Building/renovation material | <i>Small amounts during renovations - taken away by contractors.</i> |
| Disposable take out food packaging | <i>Cafeteria or from outside sources. Generated in offices/cafeteria.</i> |
| Cell phones | <i>Recycle old cell phones using food bank program.</i> |
| Diapers | n/a |
| Clothing/textiles | n/a |
| Other: <i>Old stationary</i> | <i>Policy to store in photocopier rooms for reuse/dispose if damaged.</i> |
| <i>Photocopier ink toner containers</i> | <i>Generated on all floors/print room</i> |

Note: When completing this form, write "n/a" in the columns where the entity will not produce any waste for a category of waste.

IV. MANAGEMENT OF WASTE

For each category of waste listed below (or other waste listed in Part III), indicate which waste items will be disposed or reused/recycled and how each item will be managed at the entity(ies).

| Category | Waste to be Disposed | Reused or Recycled Waste |
|---|--|---|
| <i>Example: Beverage cans</i> | <i>Staff/clients may place in garbage bin.</i> | <i>Staff/clients place cans in recycling receptacles. Collection staff later collect cans in carts.</i> |
| Aluminum food and beverage cans | <i>Some cans may end up in the garbage.</i> | <i>Collected from receptacles and emptied into recycling carts.</i> |
| Cardboard | | <i>Broken down/placed in recycling bin.</i> |
| Fine paper | | <i>Collected from each floor/print room and emptied into recycling carts.</i> |
| Glass food and beverage bottles/jars | | <i>Collected from receptacles and emptied into recycling carts.</i> |
| Newsprint | | <i>Collected from receptacles and emptied into recycling carts.</i> |
| Steel food and beverage cans | | <i>Collected from receptacles and emptied into recycling carts.</i> |
| PET (#1) plastic food and beverage bottles | | <i>Collected from receptacles and emptied into recycling carts.</i> |
| HDPE (#2) plastic jugs, crates, totes and drums | | <i>Collected from cafeteria/shipping area and placed into recycling carts.</i> |
| LDPE (#4) plastic film | <i>Placed into waste compactor.</i> | |
| Polystyrene (#6) | <i>Placed into waste compactor.</i> | |
| Organics | <i>Placed into waste compactor.</i> | |
| Boxboard e.g. shoe or cereal boxes | | <i>Collected from receptacles and emptied into recycling carts.</i> |
| Glossy magazines, catalogues, flyers | | <i>Collected from receptacles and emptied into recycling carts.</i> |
| Wood | <i>n/a</i> | |
| Steel | <i>n/a</i> | |
| Drywall | <i>Taken away by contractors.</i> | |
| Skids | <i>Broken skids are placed into waste compactor.</i> | <i>Skids in good condition are removed by certain suppliers for reuse.</i> |
| Paper towels | <i>Placed into waste compactor.</i> | |
| Printer cartridges | | <i>Recycled via reuse program.</i> |
| IT equipment/audio-visual equipment | <i>n/a (removed by contractor)</i> | |
| Furniture | <i>Broken-disposed in compactor.</i> | <i>Good condition - stored for reuse.</i> |
| Building/renovation material | <i>n/a (removed by contractor)</i> | |
| Disposable take out food packaging | <i>Placed into waste compactor.</i> | |
| Cell phones | | <i>Recycled via food bank program.</i> |
| Diapers | <i>n/a</i> | |
| Clothing/textiles | <i>n/a</i> | |
| Other: <i>Old stationary</i> | <i>Disposed if damaged.</i> | <i>Stored in copier rooms for reuse.</i> |
| <i>Photocopier toner containers</i> | | <i>Collected/sent for recycling</i> |

Note: When completing this form, write "n/a" in the columns where the entity will not produce any waste for a category of waste.

V. ESTIMATED QUANTITY OF WASTE PRODUCED ANNUALLY

| Estimated Amount of Waste Produced kgs or tonnes (t) | | | | | | | | | | | | | |
|---|---------------------|--------------------------|------------------------|---------------------|--------------------------|------------------------|---------------------|--------------------------|------------------------|---------------------|--------------------------|------------------------|--|
| Categories of Waste | Generated | | | Reused | | | Recycled | | | Disposed | | | |
| | "A" Base Year | "B" Current Year 2 | "C" Change (A-B) | "A" Base Year | "B" Current Year 2 | "C" Change (A-B) | "A" Base Year | "B" Current Year 2 | "C" Change (A-B) | "A" Base Year | "B" Current Year 2 | "C" Change (A-B) | |
| Aluminum food and beverage cans | 100kg | 90kg | -10kg | 0 | 0 | 0 | 75kg | 85kg | +10kg | 25kg | 5kg | -20kg | |
| Cardboard | 4 t | 3.8t | -.2 t | 0 | 0 | 0 | 3.2 t | 3.4 t | +.2 t | .8 t | .4 t | -.4 t | |
| Fine paper | 3 t | 2.7t | -.3t | 0 | 0 | 0 | 2.1 t | 2.4 t | +.3 t | .9 t | .3 t | -.6 t | |
| Glass food and beverage bottles/jars | 302kg | 268kg | -34kg | 0 | 0 | 0 | 250kg | 240kg | -10kg | 52kg | 28kg | -24kg | |
| Newsprint | 104kg | 82kg | -22t | 0 | 0 | 0 | 75kg | 69kg | -6kg | 29kg | 13kg | -16kg | |
| Steel food and beverage cans | 203kg | 166kg | -37kg | 0 | 0 | 0 | 180kg | 151kg | -29kg | 23kg | 15kg | -8kg | |
| PET (#1) plastic food and beverage bottles | 92kg | 95kg | +3kg | 0 | 0 | 0 | 75kg | 81kg | +6kg | 17kg | 14kg | -3kg | |
| HDPE (#2) plastic jugs, crates, totes, drums | 111kg | 96kg | -15kg | 0 | 0 | 0 | 90kg | 80kg | -10kg | 21kg | 16kg | -5kg | |
| LDPE (#4) plastic film | 30kg | 26kg | -4kg | 0 | 0 | 0 | 0 | 0 | 0 | 30kg | 26kg | -4kg | |
| Polystyrene (#6) | 25kg | 28kg | +3kg | 0 | 0 | 0 | 0 | 0 | 0 | 25kg | 28kg | +3 kg | |
| Organics | 1.1 t | 1 t | -.1t | 0 | 0 | 0 | 0 | 300kg | +300kg | 800kg | 700kg | -100kg | |
| Boxboard shoe boxes, cereal boxes, etc. | 50kg | 44kg | -6kg | 0 | 0 | 0 | 30kg | 31kg | +1kg | 20kg | 24kg | +4kg | |
| Glossy magazines, catalogues, flyers | 80kg | 75kg | -5kg | 0 | 0 | 0 | 50kg | 53kg | +3kg | 30kg | 45kg | +15kg | |
| Wood | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | |
| Steel | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | |
| Drywall (contractor) | 100kg | 67kg | -33kg | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | |
| Skids | 320kg | 278kg | -42kg | 0 | 0 | 0 | 275kg | 249kg | -26 | 45kg | 29kg | -16kg | |
| Paper towels | 250kg | 232kg | -18kg | 0 | 0 | 0 | 0 | 0 | 0 | 250kg | 232kg | -18kg | |
| Printer cartridges | 40kg | 36kg | -4kg | 0 | 0 | 0 | 40kg | 36kg | -4kg | 0 | 0 | 0 | |
| IT equipment/audio-visual equipment (leased) | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | |
| Furniture | 150kg | 138kg | -12kg | 90kg | 77kg | -13kg | 0 | 0 | 0 | 60kg | 61kg | +1kg | |
| Building/removal material (contractor) | 350kg | 278kg | -72kg | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | |
| Disposable take out food packaging | 230kg | 205kg | -25kg | 0 | 0 | 0 | 0 | 0 | 0 | 230kg | 205kg | -25kg | |
| Cell phones | 25kg | 30kg | +5kg | 0 | 0 | 0 | 25kg | 30kg | +5kg | 0 | 0 | 0 | |
| Diapers | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | |
| Clothing/Textiles | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | |
| Other: Old stationary | 20kg | 17kg | -3kg | 17kg | 14kg | -3kg | 0 | 0 | 0 | 3kg | 3kg | 0kg | |
| Photocopier toner cartridges | 15kg | 16kg | +1kg | 0 | 0 | 0 | 15kg | 16kg | +1kg | 0 | 0 | 0 | |
| Total | 10,697t | 9,767t | -0.93 t | 107kg | 91kg | -16kg | 6.48 t | 7.221t | +0.74t | 3.36 t | 2.14t | -1.22 t | |
| Percent Change (total C ÷ total A x 100) | | | -8.69% | | | -14.95% | | | 11.42% | | | -36% | |

Note: When completing this form, write "n/a" in the "Estimated Amount of Waste Produced" column where the entity will not produce any waste for a category of waste.
* Fill out these columns each year following the initial waste audit or baseline year to determine the progress that is being made by your waste reduction program.

Note: When completing this form, write "n/a" in the "Estimated Amount of Waste Produced" column where the entity will not produce any waste for a category of waste.
 * Fill out these columns each year following the initial waste audit or baseline year to determine the progress that is being made by your waste reduction program.

VI. ESTIMATED AMOUNT OF REUSED OR RECYCLED MATERIALS OR PRODUCTS USED IN THE OPERATION OF THE ENTITY

[illegible]

Note: When completing this form, write "n/a" in the columns when the entity will not reuse materials or products or use material or products that contains recycled content.

I hereby certify that the information provided in this Report of Waste Audit is complete and correct.

| | | |
|---|-----------------------------------|--------------------------------|
| Signature of authorized official: <i>A. Recycler</i> | Title: <i>Property Manager</i> | Date: <i>August 1, 2008</i> |
|---|-----------------------------------|--------------------------------|

Creating a Waste Reduction Work Plan

Now you are ready to create your own waste reduction work plan.

Step 1: Review Current 3Rs Activities

To begin the process, review your Waste Audit Report and assemble information relating to 3Rs actions currently in place, including the following:

- Waste reduction policies
- Current waste reduction, reuse, recycling, and disposal activities
- Types and quantities of materials in each activity
- Achievement of current waste reduction targets
- Operating cost impacts as a result of 3Rs activities.

Step 2: Identify Areas of Greatest Waste Reduction Impact Via the 3Rs

A key factor in finding 3Rs opportunities for waste reduction involves examining those materials that make up a large part of the waste produced. Consider:

- Disposal cost
- Potential for source separation
- Potential to reduce, reuse or recycle
- Complexity of handling
- Current and potential regulatory requirements.

Figure 4 shows typical ways to rank the waste material by the greatest waste reduction impact. Based on this example, diverting fine paper and cardboard would result in the greatest impact.

Figure 4: Ranking of Materials by Waste Reduction Impact

| Waste Material Type | Volume (m ³) | Weight (tonnes) | | Waste Cost (\$/tonne) | |
|---------------------|--------------------------|-------------------|----------------|-----------------------|-----------------------|
| <i>Cardboard</i> | <i>64.8</i> | <i>43.2</i> | | <i>98</i> | |
| <i>Fine Paper</i> | <i>32.4</i> | <i>64.8</i> | | <i>148</i> | |
| <i>Newsprint</i> | <i>4.3</i> | <i>10.8</i> | | <i>6</i> | |
| <i>Aluminum</i> | <i>10.8</i> | <i>2.2</i> | | <i>25</i> | |
| <i>Glass</i> | <i>21.6</i> | <i>10.8</i> | | <i>25</i> | |
| Ranked by Volume | | Ranked by Weight | | Ranked by Waste Cost | |
| Waste Material Type | Volume (m ³) | | Weight (tonne) | | Waste Cost (\$/tonne) |
| <i>Cardboard</i> | <i>64.8</i> | <i>Fine Paper</i> | <i>64.8</i> | <i>Fine Paper</i> | <i>148</i> |
| <i>Fine Paper</i> | <i>32.4</i> | <i>Cardboard</i> | <i>43.2</i> | <i>Cardboard</i> | <i>98</i> |
| <i>Glass</i> | <i>21.6</i> | <i>Newsprint</i> | <i>10.8</i> | <i>Glass</i> | <i>25</i> |
| <i>Aluminum</i> | <i>10.8</i> | <i>Glass</i> | <i>10.8</i> | <i>Aluminum</i> | <i>25</i> |
| <i>Newsprint</i> | <i>4.3</i> | <i>Aluminum</i> | <i>2.2</i> | <i>Newsprint</i> | <i>6</i> |

Step 3: Assess Waste Reduction Priorities

After identifying areas for potential waste reduction, you should look at the possible impact of other priorities on your 3Rs options. At this point in your waste reduction work plan development, you should consider at least the following items:

- Material quality requirements: There may be restrictions or standards that recycling companies will require you to meet.
- Economic benefits: Review the costs and benefits of each waste reduction opportunity.
- Continuing disposal availability: Be aware of anticipated landfill closures, increased tipping fees, or other factors that may impact the disposal of waste.
- Changing operating space constraints: Availability of on-site storage space and storage space with adequate fire safety.

Any other priority influences that relate specifically to your establishment should be factored into your waste reduction decisions (e.g., handling of confidential records).

Step 4: Determine Why Waste Is Generated

In assessing your waste reduction options, you should ask the following basic question at the start “*Why is this material being used?*” Questions such as this can stimulate thought and help you develop many other ways of dealing with the material under review. A list of suggested questions is shown below.

| Purpose | Why is the material being used? | What else could be used? | What should be used? |
|----------|---------------------------------|----------------------------------|--------------------------|
| Place | Where is it used? | Where else could it be used? | Where should it be used? |
| Sequence | When is it used? | When could it be used elsewhere? | When should it be used? |
| Person | Who uses it? | Who else could use it? | Who should use it? |
| Means | How is it used? | How else could it be used? | How should it be used? |

Answers to these questions may uncover options for reducing, reusing or recycling your wastes, including the following:

- Where waste can be reduced by eliminating the use of certain materials or processes in your operations.
- Where other materials can be used that, in turn, can be reused or recycled.
- Where less wasteful or disposable materials can be used.
- Where less material can be purchased (e.g. buying in bulk versus individually wrapped items).
- Where previously recycled materials can be used.
- Where controls can be set up to reduce waste generation during your operations.

Step 5: Identify Opportunities to Reduce, Reuse and Recycle Waste

This section outlines some 3Rs opportunities that are in common use. In many cases, the ideas are very simple, yet they can lead to more significant initiatives.

Reduce Waste

Staff at your facility may already use various methods to reduce the quantity of waste being generated. For example, you may already have replaced some disposable products with reusable products.

You should also take a similar approach for each of the materials you use to support and maintain your various departments. Focus on reducing the quantities of disposable supplies and equipment used. In administration areas, focus on improving purchasing policies to reduce the amount of incoming packaging, or reducing the quantities of material you use.

Paper Usage. Print double-sided photocopies. E-mail memos and reports to staff or clients instead of providing hard copies. Encourage staff to save digital copies of documents instead of printing them. Remove names from mailing lists, if magazines or catalogues are no longer needed. Use voice and electronic mail.

Disposable Packaging. When purchasing supplies, ask for loose items rather than individually wrapped ones. Use permanent instead of disposable tape dispensers. Request “vendor take back” of packaging.

Bulk Purchasing Practices. Assess bulk purchases to achieve volume discounts. Less packaging is usually incorporated with bulk purchases than individually purchased goods.

Cafeteria Waste. Avoid using single-serve condiment packages. Provide a discount for those customers that bring their own coffee/travel mug. Review menus, concentrating on portion size to reduce waste. Encourage employees and students to bring lunches in reusable containers, e.g., start a “litterless lunch” program. Use napkin dispensers to help deter over use of napkins.

Washrooms. Where convenient, replace throwaway hand towel dispensers with hand dryers.

Manufacturing Technology. Consider use of newer manufacturing technologies that reduce material usage where appropriate. Ensure that process start-up and/or cut-off allowances are not excessive due to older technology. Improve process controls to avoid waste.

Reuse Waste

Many waste products in your facility may be reused. As with reduction initiatives, you should seek staff input on every implication of this strategy.

“Disposable” Supplies. Use reusable envelopes for inter-office/faculty/classroom mail.

Cafeteria Utensils. If operating cafeteria services, provide users with reusable or recyclable mugs, dishware, and utensils instead of disposable cups, dishes, and utensils.

Used Equipment. Donate or sell reusable items. Equipment and supplies that are no longer

required are often attractive to charitable organizations.

Left Over Food. Many food banks welcome donations of consumable fresh goods and out-dated packaged goods. Contact your local social organizations to see if you can help in this way.

Packaging. Talk to your suppliers about replacing disposable packaging with reusable packaging. Work out ways to return packaging to suppliers. For example, sturdy corrugated boxes or plastic crates used to package items may be returned for reuse.

Recycle Waste

Markets exist for many recyclable materials, including corrugated cardboard, office paper, newsprint, glass, aluminum, steel, plastic items and food waste. Others may be added to your recycling list, as the markets develop.

Source Separation. Ensure that you source separate the types of waste materials as required under O. Reg. 103/94 and then go beyond these minimum requirements to source separate and recycle other materials.

Employee Training. All employees should be provided with training in source-separation methods and supplied with adequate well-labeled containers and storage areas to collect recyclable wastes.

Recyclable Materials. Ensure that you use recyclable materials to manufacture products.

Recycled Content. Pursue opportunities to use recycled materials in your products. Recycling success depends on secure markets for materials. You can also help by purchasing products with recycled content.

“Close the Loop”. Suppliers of raw materials or packaging materials may be able to recycle some of your waste materials. Encourage vendors to take back recyclables.

Internal Recycling. Recycle your own product materials. Where feasible, introduce processes to support internal recycling of waste materials.

Organic Waste. Examine composting opportunities. Check with private operators or your local municipality for opportunities to compost organic materials such as food waste, leaf and yard waste and paper towels.

Business Directory or Internet. Find recycling companies in your area by using a local business directory or by doing a search on the internet.

Step 6: Assess Impact of Material Purchasing Practices on Waste Reduction

Many of your waste reduction opportunities will involve your material purchasing practices. In some cases, you may develop a purchasing policy to buy materials that already have a recycled content. This action has the added benefit of improving the overall market for recycled materials. Actions to change the material used to manufacture your products or provide your services may involve discussions with your suppliers. For other products, you can work with your supplier to

provide you with more “environmentally sound” materials. Replacing non-recyclable materials with reusable or recyclable materials gives economic benefits as well as greater waste diversion.

Another important waste reduction action with suppliers involves reducing packaging. As part of their purchasing and materials management policies, many companies set up distribution systems with their suppliers to use returnable transportation/ storage containers.

Step 7: Complete an Achievable Waste Reduction Work Plan

Your waste reduction work plan is a compilation of the waste reduction opportunities you have identified and the actions you intend to take in reducing your wastes. At this stage you should also set waste reduction targets. Try to set realistic waste reduction targets. It is important that your work plan is achievable.

Your targets will form the basis for internal and external waste reduction actions for each waste material. These decisions reflect the benefits of accurate waste audit information. Excessive over-targeting that results in missed targets could have negative effects on your employees’ attitudes and confidence in future waste reduction work plans.

Figure 5 shows a sample of a completed Waste Reduction Work Plan report. This ministry report is designed to complement the Waste Audit Report. The work plan focuses on the wastes for which reduction actions have been identified and reduction targets set. The format allows actions on separate waste materials to be identified as well as the total amounts of waste reduced, reused and recycled. A blank form can be found at the end of this guide as well as digital copies that are available with the 3Rs guides through the ministry’s website listed in Appendix A.

Figure 5:**Ministry of the Environment Waste Form***Sample***Report of a Waste Reduction Work Plan****Industrial, Commercial and Institutional Establishments**

As required by O. Reg. 102/94

This report must be prepared 6 months after becoming subject to O. Reg. 102/94 and a copy retained on file for at least five years after it is prepared, and be made available to the ministry upon request.

I. GENERAL INFORMATION

| | | | |
|--|-------------------------------------|-------------------------------------|---|
| Name of Owner and/or Operator of Entity(ies) and Company Name: <i>1234 Ontario Ltd.</i> | | | |
| Name of Contact Person: <i>Ms. Recycler</i> | | Telephone #: <i>416-123-4567</i> | Email address: <i>recycler@1234Ontario.com</i> |
| Street Address(es) of Entity(ies): <i>123 Environment Street</i> | | | |
| Municipality: <i>Anyplace</i> | | | |
| Type of Entity (check one) | | | |
| Retail Shopping Establishments | <input type="checkbox"/> | Hotels and Motels | <input type="checkbox"/> |
| Retail Shopping Complexes | <input type="checkbox"/> | Hospitals | <input type="checkbox"/> |
| Office Buildings | <input checked="" type="checkbox"/> | Educational Institutions | <input type="checkbox"/> |
| Restaurants | <input type="checkbox"/> | Large Manufacturing Establishments | <input type="checkbox"/> |

Note: O. Reg. 102/94 does not apply to multi-unit residential buildings.

II. DESCRIPTION OF THE ENTITY

| |
|--|
| Provide a brief overview of the entity(ties): |
| <p><i>Twenty three storey office building with a floor area of approximately 11,000 m², two storey underground parking garage, cafeteria, main atrium area. Each floor above the atrium contains 2 washrooms, kitchenette/servery, 2 photocopy rooms, a reception/lobby area, janitor station, individual cubicles as well as enclosed offices.</i></p> <p><i>The atrium includes a small coffee shop - mainly for take out, public seating, security desk and 2 washrooms.</i></p> <p><i>Lower floor/below ground is a printing room, washrooms, maintenance office, a shipping area containing a loading dock, short term parking, shipping/receiving office, and a waste management area for the waste compactor and recycling carts.</i></p> <p><i>The cafeteria is located on the 3^d floor and has a full food preparation area/kitchen, serving area, tableware wash area with dishwashers, sitting area for approximately 40 persons. Cafeteria provides food on plates with reusable cutlery (for food and beverages consumed inside the cafeteria). Take out containers are used for any food or beverages consumed elsewhere. Most food and beverages are purchased as take out.</i></p> |

III. PLANS TO REDUCE, REUSE AND RECYCLE WASTE

| | |
|--|---|
| For each category of waste described in Part V of "Report of a Waste Audit" (on which this plan is based), explain what your plans are to Reduce, Reuse and Recycle the waste, including: 1) how the waste will be source separated at the establishment, and 2) the programs to reduce, reuse and recycle all source separated waste. | |
| Waste Category (as stated in Part V of your "Report of a Waste Audit") | Source Separation and 3Rs Program |
| <i>Example: fine paper (e.g. from an office)</i> | <i>"Fine Paper 3Rs Program" <u>Reduce:</u> Staff will be encouraged to print on both sides of each sheet. <u>Reuse:</u> Discarded paper with print only on one side will be used for note pads/scrap. <u>Recycle:</u> Staff will be provided with instructions via email. Receptacles will be provided beside each desk. Staff will empty receptacles into centralized containers. Custodial staff will empty centralized containers into carts and then bulk container at loading dock for collection by recycling company.</i> |
| <i>Aluminum food and beverage cans</i> | <i>Recycling receptacles will continue to be located in key areas on all floors. Add new labels with text and pictures to all recycling receptacles.</i> |
| <i>Cardboard</i> | <i>Staff will continue to be asked to break down boxes and place into recycling bins. A check will be made to ensure no cardboard is placed with waste.</i> |
| <i>Fine paper</i> | <i><u>Reduce:</u> Staff will be encouraged to print on both sides of each sheet. <u>Reuse:</u> Paper with print only on one side will be used for note pads/scrap. <u>Recycle:</u> Deskside paper bins and mini garbage bins will be provided at each desk. Staff will empty receptacles into centralized containers. Custodial staff will empty centralized containers into carts and then into bulk container at loading dock for collection by recycling company.</i> |
| <i>Glass food and beverage bottles/jars</i> | <i>(same as Aluminum food and beverage cans)</i> |
| <i>Newsprint</i> | <i>(same as Aluminum food and beverage cans)</i> |
| <i>Steel food and beverage cans</i> | <i>(same as Aluminum food and beverage cans)</i> |
| <i>PET (#1) plastic food and beverage bottles</i> | <i>(same as Aluminum food and beverage cans)</i> |
| <i>HDPE (#2) plastic jugs, crates, totes and drums</i> | <i>Collect from janitor rooms and shipping area and place into recycling bins in loading area.</i> |
| <i>LDPE (#4) plastic film</i> | <i>Will speak to recycling company about receiving this material or will have product suppliers reduce usage or take back for recycling.</i> |
| <i>Polystyrene (#6)</i> | <i>Will speak to recycling company about receiving this material or will have product suppliers reduce usage or take back for recycling.</i> |
| <i>Organics</i> | <i>Will speak to a waste management company about receiving this material for composting. Will need to purchase collection bins for kitchenettes/cafeteria.</i> |
| <i>Boxboard e.g. shoe or cereal boxes</i> | <i>(collected together with newspaper)</i> |
| <i>Glossy magazines, catalogues, flyers</i> | <i>(collected together with newspaper)</i> |
| <i>Skids</i> | <i>Continue to return skids in good order back to supplier.</i> |
| <i>Paper towels</i> | <i>Will look into with organics collection.</i> |
| <i>Printer cartridges</i> | <i>Continue to divert via recycling program.</i> |
| <i>IT equipment/audio-visual equipment</i> | <i>Will speak to company with lease contract to ensure that old equipment is being reused or recycled properly.</i> |
| <i>Furniture</i> | <i>Furniture in good condition is being reused. Will look into donation of damaged furniture for repair and reuse.</i> |
| <i>Building/renovation material</i> | <i>Add clause to building contracts that all renovation waste that is removed from the building must be source separated and diverted as reasonably possible.</i> |

| | |
|---|--|
| <i>Disposable take out food packaging</i> | <i>Encourage staff to bring reusable mugs to cafeteria/speak to owner about providing discount off of price of coffee. Review biodegradable food containers.</i> |
| <i>Cell phones</i> | <i>Continue to use "cell phones for food program."</i> |
| <i>Other: Photocopier ink toners</i> | <i>Continue to recycle photocopier ink toner containers.</i> |
| <i>Old stationary</i> | <i>Continue to reuse old stationary (store in copier room).</i> |

IV. RESPONSIBILITY FOR IMPLEMENTING THE WASTE REDUCTION WORK PLAN

| Identify who is responsible for implementing the Waste Reduction Work Plan at your entity(ies). If more than one person is responsible for implementation, identify each person who is responsible and indicate the part of the Waste Reduction Work Plan that each person is responsible for implementing. | | |
|---|--|---------------------|
| Name of Person | Responsibility | Telephone # |
| <i>Jack Reduce</i> | <i>Communications, announcements, bin labels, e-newsletters, etc.</i> | <i>416-123-4567</i> |
| <i>Tim Reuse</i> | <i>Ensure policy to duplex print is being followed, manage reuse program for cell phones, printer toner, etc. Look into programs where supplier takes back packaging or old/damaged goods.</i> | <i>416-123-4567</i> |
| <i>Kim Recycle</i> | <i>Collection contracts, search for new markets for materials currently not recycled.</i> | <i>416-123-4567</i> |

V. TIMETABLE FOR IMPLEMENTING WASTE REDUCTION WORK PLAN

| Provide a timetable indicating when each Source Separation and 3Rs program of the Waste Reduction Work Plan will be implemented. | |
|--|--|
| Source Separation and 3Rs Program | Schedule for Completion |
| <i>Example. Fine Paper 3Rs Program</i> | <i>"Deskside receptacles and centralized containers to be purchased in March. New collection contract for recycling to be arranged for April Kick off for program and instructions to staff regarding 3Rs program to occur in April 15" OR "3Rs Program currently in place."</i> |
| <i>Aluminum food and beverage cans</i> | <i>Develop new text and picture labels for all recycling receptacles. Complete by Oct/08.</i> |
| <i>Cardboard</i> | <i>Immediately send out reminder to staff about breaking down cardboard and reminder to custodial staff to ensure all cardboard is recycled.</i> |
| <i>Fine paper</i> | <i>Buy deskside recycling and garbage bins, and centralized recycling and waste containers in Oct/08. Switch old containers with new system following delivery and announce new program to staff with an instructional e-mail and posters.</i> |
| <i>Glass food and beverage bottles/jars</i> | <i>Same as for aluminum containers.</i> |
| <i>Newsprint</i> | <i>Same as for aluminum containers.</i> |
| <i>Steel food and beverage cans</i> | <i>Same as for aluminum containers.</i> |
| <i>PET (#1) plastic food and beverage bottles</i> | <i>Same as for aluminum containers.</i> |
| <i>HDPE (#2) plastic jugs, crates, totes and drums</i> | <i>Same as for aluminum containers.</i> |
| <i>LDPE (#4) plastic film</i> | <i>Will contact recycling company in Dec/08. Will speak to product suppliers at same time about decreasing use of film or to take back.</i> |
| <i>Polystyrene (#6)</i> | <i>Will contact recycling company in Dec/08. Will speak to product suppliers at same time about decreasing use of film or to take back.</i> |
| <i>Organics</i> | <i>Will contact waste management company in Jan/09. If program can be implemented, will aim for Spring launch. Purchase bins in March/09.</i> |

| | |
|---|---|
| <i>Boxboard e.g. shoe or cereal boxes</i> | <i>Same as for aluminum containers.</i> |
| <i>Glossy magazines, catalogues, flyers</i> | <i>Same as for aluminum containers.</i> |
| <i>Skids</i> | <i>Continue take back program, as is.</i> |
| <i>Paper towels</i> | <i>(will coordinate with organics, if possible).</i> |
| <i>Printer cartridges</i> | <i>Continue reuse program.</i> |
| <i>IT equipment/audio-visual equipment</i> | <i>Speak to contractor in Oct/08.</i> |
| <i>Furniture</i> | <i>Look into agencies that might receive damaged furniture for reuse - Feb/09.</i> |
| <i>Building/renovation material</i> | <i>Add clause to building contracts, beginning in April/09.</i> |
| <i>Disposable take out food packaging</i> | <i>Speak with cafeteria in Dec/08 about providing a discount for staff with reusable mugs and implement program in new year, if favourable. Review biodegradable take out containers in Jan/09.</i> |
| <i>Cell phones</i> | <i>Continue with current reuse program.</i> |
| <i>Other: Photocopier ink toners</i> | <i>Continue with current reuse program.</i> |
| <i>Old stationary</i> | <i>Continue with current reuse program.</i> |

VI. COMMUNICATION TO STAFF, CUSTOMERS, GUESTS AND VISITORS

| |
|--|
| <p>Explain how the Waste Reduction Work Plan will be communicated to employees, customers, tenants, guests/visitors and students:</p> <p><i>Each new or revised program will be communicated via an "e-nouncement" (email announcement). Twenty minute seminars will be held when the paper recycling and mini waste bin program is implemented.</i></p> <p><i>New labels (with text and pictures) will be applied to recycling and waste receptacles and to large collection bins in loading dock, to ensure that staff, public, contractors, etc. know what to place into the containers.</i></p> <p><i>Green Team will be formed in January/09 to work on waste diversion program and any other office environmental program.</i></p> |
|--|

VII. ESTIMATED WASTE PRODUCED BY MATERIAL TYPE AND THE PROJECTED AMOUNT TO BE DIVERTED BY THE 3Rs

| Material Categories (as stated in Part III) | Estimated Annual Waste Produced * (kgs or tonnes) | Name of Proposed 3Rs Program (as stated in Part III) | Projections to Reduce, Reuse or Recycle Waste (kgs or tonnes) | | | Estimated Annual Amount to be Diverted ** (%) |
|---|--|---|--|---------------|-------------------|--|
| | | | Reduce | Reuse | Recycle | |
| Example: Fine Paper | 1.8 tonnes | Fine Paper 3Rs Program | 200 kg | 100 kg | 1.2 tonnes | 83 |
| Aluminum food and beverage cans | 90kg | Aluminum food and beverage cans program | 0 | 0 | 85kg | 94 |
| Cardboard | 3.8t | Cardboard program | 200kg | 0 | 3.4 t | 95 |
| Fine paper | 2.7t | Fine paper program | 200kg | 0 | 2.4t | 96 |
| Glass food and beverage bottles/jars | 268kg | Glass food and beverage bottles/jars program | 0 | 0 | 240kg | 90 |
| Newsprint | 82kg | Newsprint program | 0 | 0 | 69kg | 84 |
| Steel food and beverage cans | 166kg | Steel food and beverage cans program | 0 | 0 | 151kg | 91 |
| PET (#1) plastic food and beverage bottles | 95kg | PET (#1) plastic food and beverage bottles program | 0 | 0 | 81kg | 85 |
| HDPE (#2) plastic jugs, crates, totes and drums | 96kg | HDPE (#2) plastic jugs, crates, totes and drums program | 0 | 0 | 80kg | 83 |
| LDPE (#4) plastic film | 26kg | LDPE (#4) plastic film program | 5kg | 0 | 0 | 19 |
| Polystyrene (#6) | 28kg | Polystyrene (#6) program | 5kg | 0 | 0 | 18 |
| Organics | 1 t | Organics program | 0 | 0 | 300kg | 30 |
| Boxboard e.g. shoe or cereal boxes | 44kg | Boxboard e.g. shoe or cereal boxes program | 0 | 0 | 31kg | 70 |
| Glossy magazines, catalogues, flyers | 75kg | Glossy magazines, catalogues, flyers prg. | 5kg | 0 | 53kg | 77 |
| Drywall (contractor) | 67kg | Drywall recycling prg. | 0 | 0 | n/a | 0 |
| Skids | 278kg | Skids program | 0 | 0 | 249kg | 90 |
| Paper towels | 232kg | Paper towels program | 10kg | 0 | 0 | 4 |
| Printer cartridges | 36kg | Printer cartridges prg. | 0 | 0 | 36kg | 100 |
| Furniture | 138kg | Furniture program | 0 | 77kg | 0kg | 56 |
| Building/renovation material (contractor) | 278kg | Building/renovation material program | n/a | n/a | n/a | 0 |
| Disposable take out food packaging | 205kg | Disposable take out food packaging program | 25kg | 0 | 0 | 12 |
| Cell phones | 30kg | Cell phones program | 0 | 0 | 30kg | 100 |
| Other: Old stationary | 17kg | Old stationary program | 0 | 14kg | 0 | 82 |
| Photocopier ink toners | 16kg | Photocopier ink toners program | 0 | 0 | 16kg | 100 |
| Total | 9.77 t | - | 450kg | 91kg | 7.22 t | 79% |

* Estimated Waste Produced = Waste Diverted (3Rs) + Waste Disposed

** Estimated Waste Diversion Rate = Amount of Waste Diverted (3Rs) ÷ Estimated Waste Produced x 100%

I hereby certify that the information provided in this Waste Reduction Work Plan is complete and correct.

Signature of authorized official:

A. Recycler

Title:

Property Manager

Date:

August 1, 2008

Launching and Maintaining the Work Plan

Creating Awareness

Launching your reduction work plan needs several important actions to ensure success.

- Your Waste Reduction Coordinator/Team should be clear about the goals and objectives of the work plan. They should assign responsibilities and authorities to appropriate personnel in all administrative, operating and maintenance areas.
- Your Team should have support from senior management.
- It is essential to make the right resources available. This may involve dedicating staff time to manage and implement your work plan and obtaining basic equipment to contain wastes. Consultation with recycling companies will help you identify what equipment is needed.
- Your Coordinator/Team should develop awareness of your work plan among all staff and employees. Open display of the work plan, as required by the regulation, and explanation of its goals will help secure full participation. Communication is key to a successful program.

Staying on Course

To ensure success, your Coordinator/Team should monitor waste reduction performance against the targets established. You may find that additional waste reduction opportunities will arise or more action is needed.

Your Coordinator/Team should report regularly on your reduction achievements. You may need to adjust operating procedures and amend reduction targets, ideally upwards.

After your first waste audit and waste reduction work plan, you are required to conduct subsequent annual reviews and keep a copy of the reports on file. This does not necessarily require you to perform another waste audit and work plan in subsequent years, but to update your latest audit and work plan data with information on activities during the past year.

You should compare your current performance with the previous year to check your reduction achievements against your targets. You can then make changes to your waste diversion targets and planned actions.

APPENDIX C - CONVERSION FACTORS

Metric Conversions

| | | | | |
|---------------------------------|---|-----------------|---|----------------------|
| 1 Tonne | = | 1000 Kilograms | = | 2200 lb |
| 1 Kilogram (kg) | = | 2.2 pounds (lb) | | |
| 1 Cubic Metre (m ³) | = | 1.3 cubic yards | = | 35.3 ft ³ |

Typical Container Sizes

| British (yd ³) | Metric (m ³) |
|-------------------------------|-----------------------------|
| 4 | 3.1 |
| 6 | 4.6 |
| 8 | 6.2 |
| 14 | 10.7 |
| 20 | 15.4 |
| 40 | 30.8 |

Example Densities

| Material | Loose (kg/m ³) | Compacted (kg/m ³) |
|-------------------------|-------------------------------|-----------------------------------|
| Aluminum Cans | 30-42 | 256 |
| Ferrous Cans | 86 | 241-288 |
| PET pop bottles | 18-24 | 306 |
| Odd Plastic | 30 | 416 |
| Glass | 300-357 | 595-1189 |
| Corrugated Container | 24-27 | 241-342 |
| Paper: | | |
| Newsprint | 214-300 | 428-600 |
| White Ledger -Flat | 223-276 | 449-550 |
| White Ledger -crumpled | 65-122 | 193 |
| Computer Printout | 389 | 779 |
| Wood: | | |
| Sawdust/shavings | 288-241 | |
| Trimming | 577 | |
| Crates | 108 | |
| Metal Scrap: | | |
| Heavy | 2408 | |
| Light | 803 | |
| Textiles | 178 | |
| Mixed Residential Waste | 150-300 | |

APPENDIX D: Ministry of the Environment Forms

- **Waste Audit Report**
- **Waste Reduction Work Plan**

The copies of the blank forms included below are in PDF format. Digital copies of the forms can also be received as Microsoft Word documents. This will allow you to modify the size of the tables, including the number of rows or the widths of columns. The forms are available from the ministry as Word documents at:
www.ene.gov.on.ca/en/publications/forms/index.php#AuditandReduction

Ministry of the Environment Waste Form
Report of a Waste Audit
Industrial, Commercial and Institutional Establishments

As required by O. Reg. 102/94

This report must be prepared 6 months after becoming subject to O. Reg. 102/94 and a copy retained on file for at least five years after it is prepared, and be made available to the ministry upon request.

I. GENERAL INFORMATION

| | | | |
|--|--------------------------|------------------------------------|--------------------------|
| Name of Owner and/or Operator of Entity(ies) and Company Name: | | | |
| Name of Contact Person: | | Telephone #: | Email address: |
| Street Address(es) of Entity(ies): | | | |
| Municipality: | | | |
| Type of Entity (check one) | | | |
| Retail Shopping Establishments | <input type="checkbox"/> | Hotels and Motels | <input type="checkbox"/> |
| Retail Shopping Complexes | <input type="checkbox"/> | Hospitals | <input type="checkbox"/> |
| Office Buildings | <input type="checkbox"/> | Educational Institutions | <input type="checkbox"/> |
| Restaurants | <input type="checkbox"/> | Large Manufacturing Establishments | <input type="checkbox"/> |

Note: O. Reg. 102/94 does not apply to multi-unit residential buildings.

II. DESCRIPTION OF ENTITY

| |
|---|
| Provide a brief overview of the entity(ties): |
|---|

III. HOW WASTE IS PRODUCED AND DECISIONS AFFECTING THE PRODUCTION OF WASTE

| For each category of waste that is produced at the entity(ies), explain how the waste will be produced and how management decisions and policies will affect the production of waste. | |
|---|--|
| Categories of Waste | How Is the Waste Produced and What Management Decisions/Policies Affect Its Production? |
| <i>Example: Disposable Food Packaging</i> | <i>Generated by customers eating inside restaurant. Food packaging is used for health reasons. Reusable mugs for customers consuming coffee/tea inside restaurant is being reviewed.</i> |
| Aluminum food and beverage cans | |
| Cardboard | |
| Fine paper | |
| Glass food and beverage bottles/jars | |
| Newsprint | |
| Steel food and beverage cans | |
| PET (#1) plastic food and beverage bottles | |
| HDPE (#2) plastic jugs, crates, totes and drums | |
| LDPE (#4) plastic film | |
| Polystyrene (#6) | |
| Organics | |
| Boxboard shoe boxes, cereal boxes, etc. | |
| Glossy magazines, catalogues, flyers | |
| Wood | |
| Steel | |
| Drywall | |
| Skids | |
| Paper towels | |
| Printer cartridges | |
| IT equipment/audio-visual equipment | |
| Furniture | |
| Building/renovation material | |
| Disposable take out food packaging | |
| Cell phones | |
| Diapers | |
| Clothing/textiles | |
| Other: | |
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Note: When completing this form, write "n/a" in the columns where the entity will not produce any waste for a category of waste.

IV. MANAGEMENT OF WASTE

For each category of waste listed below, indicate which waste items will be disposed or reused/recycled and how each item will be managed at the entity(ies).

| Category | Waste to be Disposed | Reused or Recycled Waste |
|---|--|--|
| <i>Example: Beverage cans</i> | <i>Staff/clients may place in garbage bins</i> | <i>Staff/clients place cans in recycling receptacles. Collection staff later collect cans. Those in garbage are disposed; those in recycling receptacles are recycled.</i> |
| Aluminum food and beverage cans | | |
| Cardboard | | |
| Fine paper | | |
| Glass food and beverage bottles/jars | | |
| Newsprint | | |
| Steel food and beverage cans | | |
| PET (#1) plastic food and beverage bottles | | |
| HDPE (#2) plastic jugs, crates, totes and drums | | |
| LDPE (#4) plastic film | | |
| Polystyrene (#6) | | |
| Organics | | |
| Boxboard shoe boxes, cereal boxes, etc. | | |
| Glossy magazines, catalogues, flyers | | |
| Wood | | |
| Steel | | |
| Drywall | | |
| Skids | | |
| Paper towels | | |
| Printer cartridges | | |
| IT equipment/audio-visual equipment | | |
| Furniture | | |
| Building/renovation material | | |
| Disposable take out food packaging | | |
| Cell phones | | |
| Diapers | | |
| Clothing/textiles | | |
| Other: | | |
| | | |
| | | |
| | | |
| | | |

Note: When completing this form, write "n/a" in the columns where the entity will not produce any waste for a category of waste.

V. ESTIMATED QUANTITY OF WASTE PRODUCED ANNUALLY

| Categories of Waste | Estimated Amount of Waste Produced (kgs or tonnes) | | | | | | | | | | | |
|---|---|--------------------------|--------------------------|---------------------|--------------------------|--------------------------|---------------------|--------------------------|--------------------------|---------------------|--------------------------|--------------------------|
| | Generated | | | Reused | | | Recycled | | | Disposed | | |
| | "A" Base Year | "B" * Current Year | "C" * Change (A-B) | "A" Base Year | "B" * Current Year | "C" * Change (A-B) | "A" Base Year | "B" * Current Year | "C" * Change (A-B) | "A" Base Year | "B" * Current Year | "C" * Change (A-B) |
| Aluminum food and beverage cans | | | | | | | | | | | | |
| Cardboard | | | | | | | | | | | | |
| Fine paper | | | | | | | | | | | | |
| Glass food and beverage bottles/jars | | | | | | | | | | | | |
| Newsprint | | | | | | | | | | | | |
| Steel food and beverage cans | | | | | | | | | | | | |
| PET (#1) plastic food and beverage bottles | | | | | | | | | | | | |
| HDPE: (#2) plastic jugs, crates, totes, drums | | | | | | | | | | | | |
| LDPE (#4) plastic film | | | | | | | | | | | | |
| Polystyrene (#6) | | | | | | | | | | | | |
| Organics | | | | | | | | | | | | |
| Boxboard shoe boxes, cereal boxes, etc. | | | | | | | | | | | | |
| Glossy magazines, catalogues, flyers | | | | | | | | | | | | |
| Wood | | | | | | | | | | | | |
| Steel | | | | | | | | | | | | |
| Drywall | | | | | | | | | | | | |
| Skids | | | | | | | | | | | | |
| Paper towels | | | | | | | | | | | | |
| Printer cartridges | | | | | | | | | | | | |
| IT equipment/audio-visual equipment | | | | | | | | | | | | |
| Furniture | | | | | | | | | | | | |
| Building/renovation material | | | | | | | | | | | | |
| Disposable take out food packaging | | | | | | | | | | | | |
| Cell phones | | | | | | | | | | | | |
| Diapers | | | | | | | | | | | | |
| Clothing/Textiles | | | | | | | | | | | | |
| Other: | | | | | | | | | | | | |
| Total | | | | | | | | | | | | |
| Percent Change (C ÷ A x 100) | | | | | | | | | | | | |

Note: When completing this form, write "n/a" in the "Estimated Amount of Waste Produced" column where the entity will not produce any waste for a category of waste.

* Fill out these columns each year following the initial waste audit or baseline year to determine the progress that is being made by your waste reduction program.

VI. ESTIMATED AMOUNT OF REUSED OR RECYCLED MATERIALS OR PRODUCTS USED IN THE OPERATION OF THE ENTITY

[illegible]

Note: When completing this form, write "n/a" in the columns when the entity will not reuse materials or products or use material or products that contains recycled content.

I hereby certify that the information provided in this Report of Waste Audit is complete and correct.

| | | |
|-----------------------------------|--------|-------|
| Signature of authorized official: | Title: | Date: |
|-----------------------------------|--------|-------|

III. PLANS TO REDUCE, REUSE AND RECYCLE WASTE

For each category of waste described in Part V of "Report of a Waste Audit" (on which this plan is based), explain what your plans are to Reduce, Reuse and Recycle the waste, including: 1) how the waste will be source separated at the establishment, and 2) the programs to reduce, reuse and recycle all source separated waste.

[illegible]

IV. RESPONSIBILITY FOR IMPLEMENTING THE WASTE REDUCTION WORK PLAN

Identify who is responsible for implementing the Waste Reduction Work Plan at your entity(ies). If more than one person is responsible for implementation, identify each person who is responsible and indicate the part of the Waste Reduction Work Plan that each person is responsible for implementing.

| Name of Person | Responsibility | Telephone # |
|----------------|----------------|-------------|
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V. TIMETABLE FOR IMPLEMENTING WASTE REDUCTION WORK PLAN

| |
|--|
| Provide a timetable indicating when each Source Separation and 3Rs program of the Waste Reduction Work Plan will be implemented. |
|--|

[illegible]

VI. COMMUNICATION TO STAFF, CUSTOMERS, GUESTS AND VISITORS

Explain how the Waste Reduction Work Plan will be communicated to employees, customers, tenants, guests/visitors and students:

VII. ESTIMATED WASTE PRODUCED BY MATERIAL TYPE AND THE PROJECTED AMOUNT

[illegible]

* Estimated Waste Produced = Waste Diverted (3Rs) + Waste Disposed

** Estimated Waste Diversion Rate = Amount of Waste Diverted (3Rs) – Estimated Waste Produced x 100%

I hereby certify that the information provided in this Waste Reduction Work Plan is complete and correct.

Signature of authorized official:

Title:

Date: _____

III. HOW WASTE IS PRODUCED AND DECISIONS AFFECTING THE PRODUCTION OF WASTE

For each category of waste that is produced at the entity(ies), explain how the waste will be produced and how management decisions and policies will affect the production of waste.

| Categories of Waste | How Is the Waste Produced and What Management Decisions/Policies Affect Its Production? |
|---|--|
| <i>Example: Disposable Food Packaging</i> | <i>Generated by customers eating inside restaurant. Food packaging is used for health reasons. Reusable mugs for customers consuming coffee/tea inside restaurant is being reviewed.</i> |
| Aluminum food and beverage cans | |
| Cardboard | |
| Fine paper | |
| Glass food and beverage bottles/jars | |
| Newsprint | |
| Steel food and beverage cans | |
| PET (#1) plastic food and beverage bottles | |
| HDPE (#2) plastic jugs, crates, totes and drums | |
| LDPE (#4) plastic film | |
| Polystyrene (#6) | |
| Organics | |
| Boxboard shoe boxes, cereal boxes, etc. | |
| Glossy magazines, catalogues, flyers | |
| Wood | |
| Steel | |
| Drywall | |
| Skids | |
| Paper towels | |
| Printer cartridges | |
| IT equipment/audio-visual equipment | |
| Furniture | |
| Building/renovation material | |
| Disposable take out food packaging | |
| Cell phones | |
| Diapers | |
| Clothing/textiles | |
| Other: | |
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Note: When completing this form, write “n/a” in the columns where the entity will not produce any waste for a category of waste.

IV. MANAGEMENT OF WASTE

For each category of waste listed below, indicate which waste items will be disposed or reused/recycled and how each item will be managed at the entity(ies).

| Category | Waste to be Disposed | Reused or Recycled Waste |
|---|--|--|
| <i>Example: Beverage cans</i> | <i>Staff/clients may place in garbage bins</i> | <i>Staff/clients place cans in recycling receptacles. Collection staff later collect cans. Those in garbage are disposed; those in recycling receptacles are recycled.</i> |
| Aluminum food and beverage cans | | |
| Cardboard | | |
| Fine paper | | |
| Glass food and beverage bottles/jars | | |
| Newsprint | | |
| Steel food and beverage cans | | |
| PET (#1) plastic food and beverage bottles | | |
| HDPE (#2) plastic jugs, crates, totes and drums | | |
| LDPE (#4) plastic film | | |
| Polystyrene (#6) | | |
| Organics | | |
| Boxboard shoe boxes, cereal boxes, etc. | | |
| Glossy magazines, catalogues, flyers | | |
| Wood | | |
| Steel | | |
| Drywall | | |
| Skids | | |
| Paper towels | | |
| Printer cartridges | | |
| IT equipment/audio-visual equipment | | |
| Furniture | | |
| Building/renovation material | | |
| Disposable take out food packaging | | |
| Cell phones | | |
| Diapers | | |
| Clothing/textiles | | |
| Other: | | |
| | | |
| | | |
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Note: When completing this form, write "n/a" in the columns where the entity will not produce any waste for a category of waste.

V. ESTIMATED QUANTITY OF WASTE PRODUCED ANNUALLY

.../4

| Categories of Waste | Estimated Amount of Waste Produced (kgs or tonnes) | | | | | | | | | | | |
|---|---|--------------------------|----------------------------|---------------------|--------------------------|----------------------------|---------------------|--------------------------|----------------------------|---------------------|--------------------------|----------------------------|
| | Generated | | | Reused | | | Recycled | | | Disposed | | |
| | "A" Base Year | "B" * Current Year | "C" * * Change (A-B) | "A" Base Year | "B" * Current Year | "C" * * Change (A-B) | "A" Base Year | "B" * Current Year | "C" * * Change (A-B) | "A" Base Year | "B" * Current Year | "C" * * Change (A-B) |
| Aluminum food and beverage cans | | | | | | | | | | | | |
| Cardboard | | | | | | | | | | | | |
| Fine paper | | | | | | | | | | | | |
| Glass food and beverage bottles/jars | | | | | | | | | | | | |
| Newsprint | | | | | | | | | | | | |
| Steel food and beverage cans | | | | | | | | | | | | |
| PET (#1) plastic food and beverage bottles | | | | | | | | | | | | |
| HDPE (#2) plastic, jugs, crates, totes, drums | | | | | | | | | | | | |
| LDPE (#4) plastic film | | | | | | | | | | | | |
| Polystyrene (#6) | | | | | | | | | | | | |
| Organics | | | | | | | | | | | | |
| Boxboard shoe boxes, cereal boxes, etc. | | | | | | | | | | | | |
| Glossy magazines, catalogues, flyers | | | | | | | | | | | | |
| Wood | | | | | | | | | | | | |
| Steel | | | | | | | | | | | | |
| Drywall | | | | | | | | | | | | |
| Skids | | | | | | | | | | | | |
| Paper towels | | | | | | | | | | | | |
| Printer cartridges | | | | | | | | | | | | |
| IT equipment/audio-visual equipment | | | | | | | | | | | | |
| Furniture | | | | | | | | | | | | |
| Building/renovation material | | | | | | | | | | | | |
| Disposable take out food packaging | | | | | | | | | | | | |
| Cell phones | | | | | | | | | | | | |
| Diapers | | | | | | | | | | | | |
| Clothing/Textiles | | | | | | | | | | | | |
| Other: | | | | | | | | | | | | |
| Total | | | | | | | | | | | | |
| Percent Change (C ÷ A x 100) | | | | | | | | | | | | |

Note: When completing this form, write "n/a" in the "Estimated Amount of Waste Produced" column where the entity will not produce any waste for a category of waste.
 * Fill out these columns each year following the initial waste audit or baseline year to determine the progress that is being made by your waste reduction program.

VI. ESTIMATED AMOUNT OF REUSED OR RECYCLED MATERIALS OR PRODUCTS USED IN THE OPERATION OF THE ENTITY

[illegible]

Note: When completing this form, write "n/a" in the columns when the entity will not reuse materials or products or use material or products that contains recycled content.

I hereby certify that the information provided in this Report of Waste Audit is complete and correct.

| | | |
|-----------------------------------|--------|-------|
| Signature of authorized official: | Title: | Date: |
|-----------------------------------|--------|-------|

As required by O. Reg. 102/94

I. GENERAL INFORMATION

| | | | |
|---|--------------------------|------------------------------------|--------------------------|
| Name of Owner and/or Operator of Entity(ies) and Company Name: | | | |
| Name of Contact Person: | | Telephone #: | Email address: |
| Street Address(es) of Entity(ies): | | | |
| Municipality: | | | |
| Type of Entity (check one) | | | |
| Retail Shopping Establishments | <input type="checkbox"/> | Hotels and Motels | <input type="checkbox"/> |
| Retail Shopping Complexes | <input type="checkbox"/> | Hospitals | <input type="checkbox"/> |
| Office Buildings | <input type="checkbox"/> | Educational Institutions | <input type="checkbox"/> |
| Restaurants | <input type="checkbox"/> | Large Manufacturing Establishments | <input type="checkbox"/> |

Note: O. Reg. 102/94 does not apply to multi-unit residential buildings.

II. DESCRIPTION OF THE ENTITY

| |
|---|
| Provide a brief overview of the entity(ties): |
| |

III. PLANS TO REDUCE, REUSE AND RECYCLE WASTE

For each category of waste described in Part V of "Report of a Waste Audit" (on which this plan is based), explain what your plans are to Reduce, Reuse and Recycle the waste, including: 1) how the waste will be source separated at the establishment, and 2) the programs to reduce, reuse and recycle all source separated waste.

[illegible]

IV. RESPONSIBILITY FOR IMPLEMENTING THE WASTE REDUCTION WORK PLAN

Identify who is responsible for implementing the Waste Reduction Work Plan at your entity(ies). If more than one person is responsible for implementation, identify each person who is responsible and indicate the part of the Waste Reduction Work Plan that each person is responsible for implementing.

| Name of Person | Responsibility | Telephone # |
|----------------|----------------|-------------|
| | | |
| | | |
| | | |

V. TIMETABLE FOR IMPLEMENTING WASTE REDUCTION WORK PLAN

Provide a timetable indicating when each Source Separation and 3Rs program of the Waste Reduction Work Plan will be implemented.

[illegible]

VI. COMMUNICATION TO STAFF, CUSTOMERS, GUESTS AND VISITORS

Explain how the Waste Reduction Work Plan will be communicated to employees, customers, tenants, guests/visitors and students:

VII. ESTIMATED WASTE PRODUCED BY MATERIAL TYPE AND THE PROJECTED AMOUNT

[illegible]
$$* \text{ Estimated Waste Produced} = \text{Waste Diverted (3Rs)} + \text{Waste Disposed}$$

Estimated Waste Diversion Rate = Amount of Waste Diverted (3Rs) ÷ Estimated Waste Produced x 100%

I hereby certify that the information provided in this Waste Reduction Work Plan is complete and correct.

Signature of authorized official:

Title:

Date:

